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ANALYSIS

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LOGIC AND FACT

By A. H. Basson

WE may understand a statement of fact, without knowing if it is true or false. We may know the sort of circumstances in which it is correct to say ' There are black swans at Kew ', without knowing if these circumstances do in fact obtain. We can imagine one set of surprises which would convince us that we were using this sentence incorrectly although we had believed ourselves to be using it correctly ; and we can imagine another, quite different, set of surprises which would convince us that the statement was false, although we had believed it to be true.

It looks the same with logic and mathematics. Consider the statement ' There are primes between 55 and 65 '. We can imagine surprises which might lead us to say we had been using this statement incorrectly, and that we misunderstood it. There are other surprises which might lead us to say that, although we understood what it meant, we were mistaken in supposing the statement to be true. Thus both in the factual and in the logical case it is possible to say ' I know what this means, but I am not sure if it is true '.

When we are doubtful about some statement of fact, we generally say this doubt proceeds from ignorance of the facts. Perhaps there are black swans at Kew, perhaps not ; we do not know. We say the same when we are doubtful about a mathematical statement. This raises a great difficulty for many people, because they want to say it is impossible that a mathematical statement may be true or false, in the way that it is possible that a factual statement may be true or false.

It is not easy to see just what this claim amounts to. It does not help us very much to say that the contradictory of a factual statement is always imaginable, whereas the contradictory of a true logical statement is never imaginable. It does not help, because we do sometimes make mistakes in logic, and so we still need to say that, although we can not imagine a logical contradiction to be true, it does sometimes seem to us that we can. And it is far from clear what we should mean by saying that, although we can never really imagine something, or make a certain supposition, it sometimes seems to us that we can.

Another difficulty is that we can sometimes ascertain the truth of a contingent proposition, by showing that it follows logically from certain premisses, known to be true. But of course

we cannot ascertain the truth of all contingent propositions in this way. We need some other method to provide a starting point, and this is provided in the case of contingent propositions. We ascertain the facts by observation. But when we wish to ascertain the truth of some logical proposition, that one contingent proposition entails another, it seems that we can only show that this follows from some other proposition of logic. We seem to be left without a starting point. This has led some philosophers to seek to ascertain the truth of logical propositions by some sort of inward observation, or contemplation of relations between ideas. And this makes a logical error look like a peculiar kind of factual mistake. It makes it look as if it can really seem to a man that *p* entails *q*, when in fact *p* entails not-*q*; just as it can seem to him that there are two eggs on the table, when in fact there is only one. And surely, what can be supposed is possible.

Suppose, for example, a man says 'There are no black swans at Kew'. Maybe he is wrong about the facts, or maybe he is misusing language. We decide which it is by taking him down to Kew and pointing out the black swans. If he says 'I see I was mistaken', he was wrong about the facts. If he says 'Those are not black swans' or 'This is not what I call "Kew"', he is misusing the word 'black' or the word 'Kew'. There are, of course, many more complicated situations, which are fortunately irrelevant at this point. I mean cases where he insists that both the black swans and the white swans are white, and so on.

Suppose a man says 'There are 57 apples in that box', when really there are only 56. Again we confront him with the apples, and again we can decide if he is wrong about the facts, or wrong about the meaning of '57'. The procedure of counting is longer than the process of looking, but not altogether unlike it. It is even more like the experimental procedure for determining if a given substance is, say, zinc.

But now suppose a man says 'If there are black swans at Kew, then there are none there'. We do not need to confront him with some fact in order to decide if he is misusing language. The procedure is inappropriate, and because it is inappropriate, it is rather misleading to say he is misusing language. This gives the impression that the procedure *is* appropriate. But there is still a question about what he is doing. I mean he might be using the sentence to assert some contingent fact, as for example if by 'If—then' he meant 'and', and if by 'none' he meant 'white swans'. Again, he might be using the sentence to express some logical truth, as would be the case if by 'none' he meant 'some', or by 'If—then' he meant 'Either—or'.

If a man says ' It is raining ' on an inappropriate occasion, we draw his attention to this. By his reaction we can tell if he is using language incorrectly, or if he is mistaken about the occasion. If a man says ' It is raining and it is not ', we cannot draw his attention to the peculiar inappropriateness of saying this on this occasion. It is always inappropriate, no matter what the occasion may be. Similarly, if a man says ' Either it is raining, or it is not ', we cannot decide his meaning by observing what is happening when he says it. It is always appropriate, no matter what is happening. So it is misleading to say ' Bad logic is bad usage ', ' Bad logic is nothing but verbal error ', and so forth, because this gives the impression that you can test out logical statements in just the same way as you test out factual statements. It gives the impression that there *is* a peculiar kind of logical facts, only you have found that no one is ever mistaken about these, but that they are sometimes mistaken about the way to express them.

This can be made clearer in another way. When we check a factual statement for meaning and truth, there are cases where we can definitely say there is a factual mistake, and cases where we can definitely say there is a verbal error. But there are ever so many borderline cases where we are still not sure what to say. There is no sharp distinction. This has led some people to say language is always rightly used, but sometimes we are mistaken about the facts ; and it is has led others to say that we are always right about the facts, but sometimes we misuse language. In both cases the worry about the borderline cases is disposed of out of hand, but at the expense of introducing a metaphysical worry in its place. Now the case of mathematical statements is similar, except that there is a stronger tendency to adopt the idealist view that it is all misunderstanding of words.

In the case of the black swans we take the man down to Kew. If, looking at the black swans, he still denies them, we normally say it is a case of misuse of language. But even here someone might say ' Perhaps he sees them as white ', that is to say perhaps it is still a factual error. There would be no point in this unless there were some other evidence which suggested it might be a factual error. In this case we should have to pursue our researches, examining his eyes for peculiarity of structure and so forth. But the possibility of these inconclusive cases does not, of course, exclude the possibility of cases conclusively pointing one way or the other on other occasions. Similarly, in the case of the 56 apples a man might count correctly, and at the end point to a space and say ' 57 '. Does he see a visionary apple, or is this a peculiarity of his procedure? Again, this possibility does

not exclude cases where we can definitely say his procedure is wrong, and other cases where we can definitely say his belief is mistaken.

In both cases we give a proof. We prove that there are black swans at Kew, and we prove there are 57 apples in the box. If the man accepts the proof, we say he was wrong about the facts. If he denies the relevance of our proof and puts forward an alternative proof of his own, we say this is a misunderstanding. If he simply cannot be made to see the proof, we are puzzled what to say. In mathematics it is the same. Suppose we have a proposition like $(a+b)(a-b)=a^2-b^2$. Someone denies this. We then take him through the proof: $(a+b)(a-b)=a(a-b)+b(a-b)=a^2-ab+ab-b^2=a^2-b^2$. If he accepts the proof, that is if he accepts all these propositions, then we say 'He understood $(a+b)(a-b)=a^2-b^2$, but wrongly believed it to be false'. If he denies the relevance of our proof, we begin to suspect that he misunderstands.

But there is a difference. The only way to prove black swans is to produce them; the only way to prove 57 apples is to produce them and accompany a sequence of actions with a sequence of integers. The only way to give a logical proof is to give a sequence of self-evident propositions. To deny a self-evident proposition when it is presented to you is certainly something like denying the black swans before you, but it is different too. When a man calls black swans white, we are tempted to ask 'Is this misuse of language, or do black swans look white to him?' In the long run, if we are not very careful indeed, we get a mysterious thing 'What he really sees', which we cannot ever discover. When a man says 'It is raining and it is not' we do not ask 'Is this misuse of language, or does it really seem so to him?' We say we know he cannot really believe both that it is raining and that it is not.

This is not to say that all logical errors are really misunderstandings of words. Logical mistakes and factual mistakes are similar in this respect. When a man denies some factual truth, it is a question, at first, whether he misunderstands, or whether he is simply mistaken about the facts. But there comes a point in our demonstration of the fact when we can decide one way or the other. We decide for the former when he denies something that we say he *must* know. In the same way, there comes a point in a logical demonstration when we can decide whether a man misunderstands, or whether he is making a logical error. But there is this difference between fact and logic. When a man calls the black swans before him white swans, we still feel that it is somehow a contingent proposition that the swans cannot

appear white to him. But when a man denies some *self-evident* proposition like 'Either it is raining or it is not', we feel that it is in some sense a necessary proposition that it cannot really seem to him that it is neither raining nor not raining.

What, then, exactly do we mean by 'self-evident', and by saying that we cannot really suppose a self-evidently true proposition to be false? This seems to be the key question, and I shall try to explain it by means of some examples.

Suppose, as an example of a self-evident truth, that a box cannot be bigger inside than outside. Now I suppose the imaginability of the contradictory might be debated. After all, something like it frequently happens in fairy stories. Perhaps we might measure the box outside and find it one foot long, and then put our scale inside and find it measures two feet. Could we then say 'some boxes are bigger inside than outside'? Is the proposition about the outside being bigger nothing more than an inductive generalisation? Clearly not, at least not at once. We should say, perhaps the scale shrinks when put inside the box, or perhaps the box grows. We prefer to abandon 'Scales never shrink', 'Boxes never grow', rather than 'Insides are never bigger than outsides'. That is how logic is superior to fact, and more certain. We could decide between 'The scale shrinks' and 'The box grows' by measuring inside and outside at the same time with previously standardised scales. If the box grows there is nothing more to it, except of course we should be very puzzled about how the scale made the box grow. If the box does not grow, must it be that the scale shrinks? If we put other things, marbles say, in the box, perhaps they shrink, perhaps not. If they do not shrink, there is nothing more to be said, except another question about causes. If the marbles do shrink, if *everything* shrinks when put in the box, we might have a causal question 'why do some boxes shrink things and some not?' We have this if we adhere to our old logical proposition 'Insides are never bigger than outsides'. But we might equally well abandon this and start to say 'some boxes have insides bigger than outsides, and some do not'. This would work just as well, better in fact, because we should avoid the awkward causal problem. We should have a geometrical puzzle instead. If all boxes always presented these phenomena, we could have a new proposition of logic 'Outsides are never bigger than insides'. We could say this, or we could use the old logic, adding 'But boxes always shrink things'. So you see, even with everything as it is now, a man might still sensibly say 'Insides are sometimes bigger than outsides', or even 'Insides are always bigger than outsides', and yet not be misusing language in any

ordinary sense. Of course, he would need to add ' But things always expand when put in boxes, I wish I knew why '. And this is the sophisticated, scientific form of the child's question ' But *why* are insides never bigger than outsides? '

A slightly different aspect of the matter can be brought out by means of another example. Consider the proposition ' Every piece of paper has two sides '. I suppose the unwary might regard this as a self-evident truth. We consider flat pieces, cones, spheres, cylinders and the like, of paper. All these have two sides. If we want to make clear what we mean by ' having two sides ', we can say this means you cannot cover the paper with writing without going over an edge or through a hole somewhere. Now we construct a Moebius strip of paper which can be covered with writing without going over an edge or through a hole somewhere. So the Moebius strip has only one side. People are surprised by this, just as they are surprised when you get them to say every song must end, and then show them a roundel. They say one of two things. Some people admit they were wrong : what they thought to be a logically true statement was really a false factual statement. Others adhere to their initial assertion in spite of Moebius and his strip. They say, ' Well, I see now I didn't mean by two sides that you *must* go over an edge or through a hole, but you *can* go over an edge or through a hole '. And of course a Moebius strip has edges and you can make holes in it. Now you cannot say that those who recant misunderstood the meaning of ' has two sides ', because we were careful to get this clear at the beginning. We cannot say that those who do not recant misunderstood the meaning because we explained it to them too. But first they agreed to one thing, and then they said they meant something else as well. They found they wanted to mean by ' has two sides ' both ' must go over the edge ' and ' can but need not '. It was not that they changed their minds about the usage of ' has two sides ' and it was not that their usage was ambiguous ; it was simply that their usage was vague. So vague that it covered both correct and incorrect mathematical usage. Thus we cannot definitely say their usage was incorrect, and that they did not understand what was meant by ' having two sides '. In other words, it is not that they had considered the possibility of a Moebius strip and had rejected it as an example of a one-sided piece of paper, but simply that they had never thought of this possibility. It had not a different place in their logic from what it has in ours ; it had *no* place in their logic. Showing it to them forced them to find a place for it.

So if by logic we mean things like ' Insides are never bigger

than outsides', it is very misleading to say logic is conventional, and even more misleading to say it is arbitrary convention. It is pure convention that 'Outside' and 'Inside' mean Outside and Inside, but what is meant by 'Insides are never bigger than outsides' is not this sort of convention at all. Statements like this are fossilized science. We have decided to let nothing alter our attitude towards them, simply because things which might have altered our attitude seldom if ever happen. You *can* say this is arbitrary convention. You can say it is arbitrary convention which prevents us from wearing a deep-sea diving outfit as normal everyday costume. It misleads people in the same way.

PROFESSOR AYER'S QUERY ON "OTHER MINDS"

By C. D. ROLLINS

I wish here to consider some recent remarks of Professor A. J. Ayer on the "other minds" perplexity[1]; and I propose them as an illustration of how important in philosophy grammatic form[2] may be, and how it may give rise to perplexity by being misunderstood.

Professor Ayer writes:

"My conclusion is this. A great deal of what is ordinarily regarded as constituting a person's mental life goes on in public. People say what they think, they express their emotions, their actions reveal their decisions and their beliefs. But there remains a residue that goes on in private, not merely in the sense that people's experiences are their own, that mine is mine and yours is yours, but in the sense that they are able to conceal them. Now the question that arises is whether this concealment is theoretically as well as practically impenetrable by others. If it is theoretically impenetrable, then I think that Mr. Wisdom is right in what he says about the argument from analogy; but if, as I am now inclined to hold, it is not theoretically impenetrable, then I do not see why the fact that I know myself to have thoughts and feelings which I do not express should not give me good reason for believing that other people do the same."[3]

Notice particularly Professor Ayer's sentence: "Now the

[1] Symposium "Other Minds" in *Arist. Soc. Sup. Vol. XX*, 1946 (pp. 188–197).
[2] Call it "verbal form" or "form" or "the appearance of expressions", as you like.
[3] p. 197.

question that arises is whether this concealment is theoretically as well as practically impenetrable by others."[4]

What I suggest is that Professor Ayer's so-called question is a verbal fiction; that it cannot possibly be answered by any description of any facts. I suggest not merely that it cannot be answered by any description of familiar and agreed-upon facts, but that there are no facts, and could be no facts, which a wished-for answer would describe; *i.e.* that insofar as we might answer his question we should not be describing the facts, and that insofar as we might describe the facts we should not be answering the question.[5] I suggest that the question is not a question in the most usual and understood sense, but only looks like one; and at most expresses a sort of linguistic longing, the conditions for the satisfaction of which are not specified.

Let us proceed by noticing how the query is built up. It presents a distinction between "practical impenetrability" and "theoretical impenetrability". If these two phrases are descriptive in the respect in which they are placed in opposition to each other, then the query may indeed be a question. If they are not, it is not a question.

What, then, do these two phrases describe? To begin with, we notice that they are used in connection with the expression "concealment", and supposedly they describe alternative properties of what the latter expression describes. And there is no doubt but what the latter expression is itself descriptive, for we may grant that Professor Ayer uses it at least approximately where we should use it ordinarily. Certainly it is often the case that a person conceals, as we should ordinarily say, his thoughts and feelings from another, indefinitely, permanently, even from everyone, so that what those persons remain ignorant of is something he could tell them. Certainly it also happens, sometimes, that they try definitely and repeatedly to find out, and fail. Therefore it may be granted that Professor Ayer uses the word "concealment" descriptively, and that we know roughly what he uses it to describe.

But what about the two phrases "practical impenetrability"

[4] Professor Ayer gives a peculiar twist to his entire discussion by speaking of *concealment* rather than of ignorance; as though a contest between persons were involved. We refer to this later.

[5] We might have argued that because the so-called question does not occur in genuine ordinary language, it is not factual, *i.e.* not a genuine question. But the present case is not one of the neater ones for invoking the doctrine of ordinary language, because of the more-or-less common occurrence of what we should then be calling an extraordinary question.

The present so-called question (let us refer to it as a *query*) is a question only in the sense in which we do sometimes so call verbal compounds simply by virtue of their having a question-mark, subject, predicate, etc. But it is not like what we most usually call questions. It presents no claim to be answered, of the sort the others do. We ask it in the context of serious discussion only when failing to see its character.

and "theoretical impenetrability"? Taking first the former, suppose we were to grant that it is descriptive. Then, we ask, is it descriptive of a *property* of concealment to which there might be an alternative property? Unfortunately we find no such property over and above the concealment itself. There is not even mere *impenetrability*, over and above. If language here is to be strictly descriptive, then to say "impenetrable concealment" is nothing more than to say "concealment" in an emphatic or categoric way; it is like saying "*unpenetrated* concealment" (emphatically), or "permanent and unexceptioned concealment". Of course there is no reason why a person should not say "impenetrable concealment" as long as he remembers that this is emphatic or categoric for "concealment". For, in remembering, he will not then go on to use the expression "practical impenetrability" on strict analogy to the usual function of the word "practical"; he will not then expect the expression "theoretical impenetrability" to signify something, or at least he will not expect it to signify something different. Now imagine asking seriously, as a factual question, whether *concealment* is theoretical as well as practical! Or, if this is too easy to imagine, reflect that instead of speaking of *concealment* Professor Ayer might equally well have spoken simply of so-and-so's *not knowing*. Imagine, then, asking seriously whether the *fact* that so-and-so *doesn't* know this-or-that (*i.e.*, whether every fact of the specified type) is theoretical as well as practical!

To ask either of these latter queries in such a manner would be to express a curiosity about anything but facts; and because it could be about *anything* but the facts—about any of an indefinite number of other things (mystical beliefs, extraordinary syntax or special language, ways of coming to agreement, etc.) —the query is not yet completed into a question. It presents a request which is troublesome because it is not clearly enough seen to be indefinite. It is roughly like asking whether the various answers, many of them "yes" and many of them "no", to an ambiguous or vague question, *are all really "yes" or all really "no"*.

Apparently Professor Ayer supposes that because a compound phrase including the word "practical" is defined by him so as to be descriptive, then when the component "practical" is replaced by a new component "theoretical", the result must be a phrase which is descriptive and which describes something other than what the original compound describes. And so it would, ordinarily, in established English usage. But not in Professor Ayer's usage; here the supposition is a mistake.

To put it another way: We can distinguish two roughly

different sorts of ignorance, one being that in which people other than Jones do not know what Jones thinks or feels about something, the other being that in which they try to discover it but fail. What *we* know about these cases of ignorance (thus specified) is that people didn't actually come to know what Jones thinks and feels; and that those who tried to, couldn't. Suppose someone now asks us, "But *could* they have?" Our response will be to remind the asker what has already been specified and what answer has already been given. If he persists with the query (as Professor Ayer seems to), then we know something is wrong: he is asking us to judge the consequent of a conditional, or hypothesis, of which the antecedent is not specified. Before we can answer, we must ask for the factual and verbal conditions which make up the antecedent.

Let us illustrate. The following would be some of the conceivable ways of specifying the full conditions and making possible an answer.

1. If: Jones conceals permanently from Smith what he conceals momentarily from Brown but Brown will eventually find out,
   then: the query "*Could* they have known?" may mean
   a. "Will Smith ever know?" (No.)
   b. "Will Brown ever know?" (Yes.)
   c. "Did Brown know before he did?" (Of course not.)
   d. "Is Smith's position like Brown's?" (No, and yes.)
   Etc.
2. If: Jones says to himself "I dislike Smith but no one must ever know", and Smith all his life, if asked in an ordinary and unsuspicious way how he and Jones get along, would answer something like "He's a good friend of mine" etc.; and Brown, who has been reading La Rochefoucauld and Hobbes, asks Jones whether he really likes Smith, but never gets a satisfactory negative,
   then: the query "*Could* they have known?" may mean
   a. "Would Brown or Robinson ever answer that Jones says to himself what Jones actually does say to himself about disliking Smith?" (Evidently not, as our case is specified.)
   b. "Will Smith ever normally say 'Jones dislikes me'?" (No.)
   c. "Could we imagine there being a fifth person, Black, who knows by experience about a real case, what *we* know in this case by specification?" (Yes.)
   d. "Would Black then know Jones' feelings towards Smith?" (Yes, some of them, or something about them).
   e. "If Black were Jones' priest, confidant, or psychoanalyst, and for years and years had had Black's confessions and confidence, and had known many of the latter's free-associations and dreams about Smith, would Black be in a position to answer most or all questions about how Jones felt towards Smith?" (Probably yes.) "Would there be anyone else who knew more?" (Probably not.) "When Black and Jones disagreed on some occasions about how Jones is

feeling at the moment toward Smith, would Black persuade Jones as often as Jones persuades Black?" (Perhaps yes, although the two sets of cases would differ in character, etc.) "Would Black always persuade Jones?" (Probably not, etc.) "Would Black be in an equally good position if Jones had never confided or talked freely?" (No.)

Etc.

3. If: We speak of whatever is *observed* about a person's feelings and thoughts as "manifestations", and about whatever is *not* observed as "inner states",

then: the question "Could they have known?" may mean

a. "Do we ever correctly predict future manifestations from present ones?" (Yes.)

b. "Do we always?" (No.)

Etc.

Etc.

We may say, of Professor Ayer's query, either that he is asking for judgment on a conditional proposition the identity of which he does not disclose; or that he is asking what would have to be a verbal question (requesting that conditions be offered), yet asking it as though it were just another factual question like "Does Brown know that his wife likes Tschaikowsky?" We could say that Professor Ayer confuses a verbal question with a factual question, and that because of the factual aspect he expects an answer but because of the verbal aspect he will never get one.[6]

His centaur-like "question" is therefore a verbal fiction, approximated by:

When Jones conceals his feelings from Smith permanently, is there some reason why he succeeds, over and above the fact that he keeps a poker face, never slips up, etc.?

What is it, over and above his acts of concealment, etc., that makes it *possible* for Jones to conceal his feelings from Smith?

Since it is *possible* for Jones to do this, does it *have* to be possible?

These are nonsense queries because we already know, or could easily specify in any example, all the facts which an answer could conceivably present.

But have we perhaps dealt too hastily with Professor Ayer's query? Suppose someone were now to object: "Don't be silly. We all admit there is no question in a simple factual sense, of course. What we wish to know is something less obvious. We wish to know whether, language being what it is and the conditions of theorizing being what they are, it is better to say, than to deny, that in addition to the ignorance which we all would say exists in cases of ordinary concealment, etc., there is *another* kind of ignorance which one person always *necessarily* suffers in respect to feelings and thoughts which are not his own.

[6] I suggest that it is the actual nonsensicality of his query which, being not fully recognised by him, leads him to propose a negative answer.

What we wish to know is whether, fact-language or object-language being what it is, we ought to say (or to deny) *in some meta-language* that there is such additional ignorance; and if so, then in *which* meta-language (on what meta-level), how, why, etc."

To this objection we can only answer that it does nothing for the so-called question. It obliges us to recite once more: "(1) Of course not, because necessary ignorance isn't ignorance, just as inconceivable knowledge isn't knowledge, despite the suggestive similarities of grammatic form between 'Smith will never know that Jones dislikes him' and 'Smith will never know what another person's feelings feel like'; or else (2) Yes and no, etc." The objection, in short, obliges us to go back over the kinds of considerations which have already been given (see especially Mr. Wisdom's discussion). The objection is useful in that it reminds us how plaguing is the linguistic longing (the longing for a fabulous reality, *i.e.* for object-language to be meta-language and then conversely) which we have noted. But it does not uncentaurize a centaur-like question. It simply reminds us how the factual-seeming question on verbal legs can go on to bother us even after we know better.

Why, then, is such a query seriously asked? Philosophically we can explain that expressions may seem to work alike when they appear alike. Beyond this, explanation would evidently be psychological, *e.g.*

> Among cases of ignorance of another's mind or feelings, sometimes we are especially impressed by those which are cases of *unwilling* ignorance and intentional concealment. This dramatic or psychological interest in *struggle* between persons leads us to speak of effort and to inquire about ability and hence possibility, and thus to speak in an extraordinary way[7] of "theoretical" versus "practical". And thus in philosophy we are sometimes led to mistake grammatic forms in the exact directions in which we do.

Or;

> Toward even ordinary cases of our ignorance factually, we tend to feel uneasy. What we *don't know*, we wish to assure ourselves either that we *can't* know, or that soon we shall. We fear never knowing, and where we expect never to know, we seek to assure ourselves by finding some way of vouching intellectually that it is all right to be ignorant. We wish, as it were, while being ignorant, to be not really ignorant after all. Intellectual perplexity then becomes the price we pay for the assurance which we didn't realise we didn't need.

But psychological suggestions are valuable *philosophically* only in so far as they make us freer to give up our philosophical mistakes.

[7] Notice that when the words "theoretical" and "practical" are used as genuine descriptions in connection with "knowledge" or "ignorance", usually it is the *practical* knowledge that is in doubt, and not the theoretical.

DESIGNATION AND TRUTH

By P. T. GEACH

Ku czci tych co polegli w sprawie Ojczyzny.

IN a recent article [1] Max Black considers the following formula, which I shall call (A):

For all x and y, if x is a sentence, and y uniquely designates x, then y is true $\equiv x$.[2]

It is not clear whether Black regards (A) as significant; he certainly suggests this, by calling (A) 'a sentence of the meta-meta-language'.[3] It is easy, however, to show that (A) cannot be significant; and our proof will use the same distinction (between a sentence and its name or designation) as occurs in (A) itself.

Consider the sentence 'Tom loves Mary'; I shall call this 'Hob'. Hob, then, is a sentence—the sentence 'Tom loves Mary'; 'Hob' on the other hand (by the usual convention for inverted commas) is not a sentence, but the name or designation of a sentence. Let us now make the proper substitutions in (A):

(B) If Hob is a sentence, and 'Hob' uniquely designates Hob, then 'Hob' is true $\equiv$ Hob.

But this result is nonsense, and therefore (A) is nonsense. For, in the first place, the clause "'Hob' is true" is nonsense; since it is Hob, not 'Hob', that is a sentence, it makes no sense to call 'Hob' true. Secondly, Black intends us to read '$\equiv$' as synonymous with 'if and only if'[4]. This reading of '$\equiv$' requires that the sense of (B) should be completed by our writing a *sentence* after '$\equiv$'; it makes nonsense if we end (B) with '$\equiv$ Hob', in which '$\equiv$' is followed merely by 'Hob', the *name* of a sentence. For the endings 'if and only if Hob is true', 'if and only if Hob is commonly said', are perfectly legitimate, but not the ending 'if and only if Hob'.

Two things may hinder our seeing this second objection. First, we may have the impression that in '$\equiv$ Hob', or 'if and only if Hob', the conjunction *is* followed by a sentence—the sentence Hob. This is quite wrong; the actual sentence Hob no more follows '$\equiv$' in '$\equiv$ Hob' than a real live elephant follows the words 'Jumbo is' in 'Jumbo is an elephant'. Secondly, '$\equiv$' is often read as 'is materially equivalent to'; and one might quite well have the ending '. . . is materially equivalent to Hob'. But 'is materially equivalent to' is *not*

[1] Max Black, "the Semantic Definition of Truth", *Analysis* 8. 4, March 1948. I shall refer to this as SDT.

[2] SDT, p. 51. [3] SDT, p. 52. [4] SDT, p. 51, note 6.

synonymous with 'if and only if'; the substitutions that are allowable in '$p \equiv q$' are different, according as we read '$\equiv$' one way or the other. Let us call the sentence 'Mary loves Tom' Nob. Then

(C_1) Hob $\equiv$ Nob; (C_2) 'Tom loves Mary' $\equiv$ 'Mary loves Tom'; are significant if '$\equiv$' is read as 'is materially equivalent to', but not if it is read as 'if and only if'. On the other hand,

(D) Tom loves Mary $\equiv$ Mary loves Tom

is significant only if '$\equiv$' is read as 'if and only if', not if it is read as 'is materially equivalent to'. In (C_1) and (C_2) the sign '$\equiv$' conjoins *designations* of the sentences Hob and Nob, in (D) it conjoins Hob and Nob *themselves*.

If we try to correct (A), the result is rather surprising. I shall use 'DES (L) . . .' as an abbreviation for the phrase: 'that which has in the language L the designation . . .' Thus, DES (English) 'red' is red, DES (French) 'l'eau' is water, and so on. I assume the legitimacy of talking about what *sentences* designate, as well as what *names* designate; that is, I assume such expressions as these to be significant: "DES (French) 'la lune est ronde'", "DES (English) 'Chicago is a large city'". (This extended concept of designation should be familiar from Carnap's *Introduction to Semantics*.)[6] Now consider the formula:

(E) For all x, x is true in L $\equiv$ DES (L) x.

This offers us a definition of 'true in L' in terms of 'designation in L'; that also, of course, is a semantical notion, but at least we have one less semantical notion on our hands. ((E) belongs, as it should, to the meta-language in which we talk about the language L).

We may see, by performing the proper substitutions, that (E) is significant and adequate. We require of a definition of truth such results as the following:

(F) 'Mon crayon est noir' is true in French $\equiv$ my pencil is black.

By direct substitution in (E), what we get is:

(G) 'Mon crayon est noir' is true in French $\equiv$ DES (French) 'mon crayon est noir'.

So what we have to show is that (G) is significant and has the same truth-value as (F). It is quite easy to do this. "DES (French) 'mon crayon'" stands for the same thing as 'mon crayon'; and again, for the same thing as 'my pencil', the English translation of 'mon crayon'; namely, for my pencil. Further "DES (French) 'noir'" stands for the same thing as 'noir'; and again, for the same thing as 'black', the English

[6] Pp. 49–55.

translation of ' noir ' ; namely, for black. So the following two sentences have the same truth-value :

(H_1) DES (French) ' mon crayon ' is DES (French) ' noir '.

(H_2) My pencil is black.

Similarly ," DES (French) ' mon crayon est noir ' " stands for the same thing as ' mon crayon est noir ', and again, for the same thing as ' my pencil is black ', the English translation of ' mon crayon est noir '. So (F) and (G), like (H_1) and (H_2), must have the same truth-value ; and *a fortiori* (G) must be significant.

Thus in any particular instance we can show that (E) gives the correct result. A general proof that (E) is an adequate definition of truth would be faced with serious difficulties.[6] But I think the reader should *grasp* its adequacy by ' intuitive induction ' from instances like (G).

An odd result follows ; " DES(French) ' mon crayon est noir ' " must be held to be a *complete sentence*—like ' mon crayon est noir ', which ' stands for the same thing '. This leads to an awkwardness as regards ordinary English syntax ; one might expect " that which has in French the designation ' mon crayon est noir ' " to be only the subject of a sentence, not a complete sentence. But this should not worry us ; it just means that in this context you do not arrive at natural English by reading ' DES(French) ' as ' that which has in French the designation . . . ' And although " that which has in French the designation ' mon crayon est noir ' " is not grammatically a complete sentence, it is so logically ; in fact, it means—according to the definition (E)—the same as : " ' mon crayon est noir ' is true in French ". If we make a grammatically complete sentence by adding a predicate such as ' is a proposition ' or ' is a fact ', we get nonsense ; just as we do by adding ' is a rose ' to the sentence ' a rose is a rose '.

The same censure applies to what Carnap would say :[7]

(I) That which has in English the designation ' Chicago is a large city ' is : Chicago is a large city.

Carnap is at least not mentally dominated by correct English ; he would insist that we must *not* understand what follows the colon in (I) to be a quotation ; and if we were to replace the colon by the conjunction ' that ', he would regard this as a concession to euphony, *not* as a sign of ' reported speech '. But if we are thus allowed to disregard the suggestions of English grammar, then, although " that which has in English the designation ' Chicago is a large city ' " (*i.e.* " DES (English) ' Chicago

[6] For the difficulties of generalisation, *cf.* Black's remarks on the formula (Φ) —SDT p. 51.

[7] *Op. cit.*, p. 52.

is a large city' '") is not a sentence for a grammarian, it may in logic be a complete sentence.

This eliminates problems about 'the designata of sentences' and 'the relation of designation'. Since "DES(English) 'Chicago is a large city'" is a complete sentence, 'DES (English)' is not a relational sign. And "that which has in English the designation 'Chicago is a large city'" does not become a significant question if we prefix 'what is . . .?'; the result is like: 'What is it is raining?'

The definition (E) shows *on its own account* what substitutions for 'x' are allowed. It would be a mistake to add the proviso 'if x is a sentence in L'; that would not prevent our getting nonsense from improper substitution.[8] For if we substitute for 'x' 'Tom' or "'Tom'"—Tom being the piper's son—the suggested proviso has the following effect:

(J_1) [If Tom is an English sentence, then] Tom is true in English if and only if that which has in English the designation Tom.

(J_2) [If 'Tom' is an English sentence, then] 'Tom' is true in English if and only if that which has in English the designation 'Tom'.

But we get nonsense whether the words in square brackets are inserted or left out; so the proviso does not help us at all. This is no objection to (E); *any* sentence *shows* what substitutions can be made for its variables, but none can *say* this about itself.[8]

[8] Wittgenstein, *Tractatus Logico-Philosophicus*, 5.5351 (the English version is here untrustworthy), and 4.1272.

ERRATA

(*Analysis* 8 . 5, "Mr. Urmson on the word 'probable'", H. Wallis Chapman.)

Page 76, line 8. *For* "half tof hese", *read* "half of these".

Page 76, lines 18, 19. *For*

"(x is white)

(x is a ball in the bag chosen) . (the first ball drawn was white) . h",

read

"(x is white)

(x is a ball in the bag chosen) . (the first ball drawn was white) . h".